

## A new species of *Brachyattalus* Wittmer, 1988 (Coleoptera: Melyridae) from Oman

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### Taxonomy, new species, Coleoptera, Melyridae, *Brachyattalus*, Oman

**Abstract.** The genus *Brachyattalus* Wittmer, 1988 (Melyridae: Malachiinae: Malachiini: Troglopina) is recorded from Oman for the first time. A new species, viz. *Brachyattalus albovittatus* sp.nov., is described and illustrated. Its distribution and ecology in the fog desert of central Oman are discussed.

### INTRODUCTION

The genus *Brachyattalus* Wittmer, 1988 was erected for *Attalusinus leveimpressus* Wittmer, 1985 (typus generis) and seven other species (Wittmer 1988). Most of the latter ones were described or previously placed in the genera *Attalus* Erichson, 1840, *Attalusinus* Leng, 1918, *Anexodes* Abeille de Perrin, 1900, *Calotroglops* Abeille de Perrin, 1890, *Carphuroides* Champion, 1923, or *Flabellattalus* Pic, 1923. Two more species were subsequently described by Wittmer (1991, 1997).

Wittmer (1988) wrote that *Brachyattalus* “should be placed next to *Attalus*” and that “it is a link between (...) [*Attalus*] and *Attalusinus*”. However, the genus *Attalus* in the widest sense is poly- and paraphyletic and in serious need of integrative taxonomic revision (cf. Gimmel et al. 2019). Furthermore, *Attalusinus* and *Brachyattalus* are currently classified as relatives of *Troglops* Erichson, 1840 (cf. Mayor 2007).

The inclusion of two species is debatable: Wittmer (1988) placed *Anexodes perrini* Champion, 1922 with reservations (!) into *Brachyattalus*. Before this act, Wittmer (1985) placed the same species into *Nepachys* Thomson, 1859, viz. into the group without modified elytral apices. Note that the latter group is presently classified as the genus *Malachiomimus* Champion, 1921, and that this taxon is currently not monophyletic and in need of taxonomic revision (S.E. Tshernyshev, pers. comm.). A close relative of *B. perrini* (Champion) is *B. ampliceps* Wittmer, 1991.

The heretofore known species of *Brachyattalus* have been found in South Africa (three species), Namibia (six species), Egypt (one species), Saudi Arabia (one species) and Iran (one species) (Wittmer 1988, 1991, 1997). The genus has a distribution area reminiscent of the Mediterranean-Southern-Africa disjunct distribution pattern (Plonski, in prep.).

The aim of the present paper is to report the occurrence of *Brachyattalus* in Oman, to propose a new taxon of the species group based upon a small population sample, and to hypothesise and discuss its ecology.

## MATERIAL AND METHODS

Five vouchers were available for the present study; they were previously conserved in alcohol (ethanol, 70%), but are now dry preserved and housed in the following collections:

AAKC private collection of Ali A. Al-Jahdhami, Al Khoudh, Oman;  
IPVC private collection of Isidor S. Plonski, Vienna, Austria;  
NHMB collection of the Natural History Museum, Basel, Switzerland;  
NMW collection of the Natural History Museum, Vienna, Austria;  
ONHM collection of the Natural History Museum, Masqat, Oman.

Label data are cited verbatim, a backslash (\) separates lines on a label, and square brackets ([...]) contain additional information or explanation. The types have been provided with one red printed label each: “HOLOTYPUS [or PARATYPUS, respectively] / *Brachyattalus / albovittatus* sp.nov. / det. I. Plonski 2020”.

The procedure for softening of vouchers and equipment for dissection and preservation of their terminalia is the same as described in Plonski (2014). Two male vouchers, viz. the holotype and one paratype, have been dissected.

The following optical instruments were used during the description process: an Olympus SMZ 10 stereo-microscope was used for observation and dissection; a Nikon SMZ 1500 stereo-microscope equipped with an ocular micrometre was used to take measurements of body parts at 80× magnification; an Olympus BX 40 microscope equipped with a camera lucida was used to make hand drawn sketches of the male terminalia (iconotype = dissected paratype in AAKC); and the digital habitus photographs were made and edited with the same equipment and software as detailed in Plonski & Háva (2020).

The distribution map was made with Simplemappr, a free online tool developed by Shorthouse (2010).

The following abbreviations are used for morphometry:

AL	antennal length
EL	elytral length
EW	elytral width
HL	head capsule length
HW	head capsule width
IOW	inter ocular width
PL	pronotal length
PW	pronotal width
SW	shoulder width

## RESULTS

### *Brachyattalus albovittatus* sp. nov.

(Figs. 1-9)

**Type locality.** Wadi Ronub (sampling site: 18.80203°N, 56.34083°E), Rima desert, Jiddat Al Arkad plateau; Al Jazer state, Al Wusta governorate, Oman.

**Type material.** Holotype (♂) labelled: “Oman, [57 km NE of] Nemer \ (PDO) [= Petroleum Development Oman, Rima Station environment; Wadi Ronub gorge] \ 18.529 N 56.147 E [sic!, see above for correct coordinates] \ 5-iv-2019 \ Col: S. Arashdi”, (NMW). Paratypes (2 ♂♂, 2 ♀♀) with identical locality-collector labels (1 ♀ in IPVC; the other three will be eventually deposited in AAKC, NHMB and ONHM).

**Description.** Habitus as in Fig. 1. Length: ~1.4 mm. Sexual dimorphism indistinct. Morphometry (both sexes): Measurements (n = 4): AL: 0.79-0.83 mm; HL: 0.24-0.29 mm; HW: 0.39-0.42 mm; IOW: 0.29-0.36 mm; PL: 0.24-0.28 mm; PW: 0.35-0.37 mm; SW: 0.44-0.46 mm; EL: 0.55-0.61 mm; EW: 0.44-0.50 mm. Indices: HW/HL: 1.43-1.68; HW/PW: 1.09-1.22; PW/PL: 1.30-1.42; EL/EW: 1.15-1.26; EL/PL: 2.16-2.26.

Colouration (both sexes): Black, except: antennae (scapi darkened on the upper sides) and maxillary palpi yellow; base of pronotum and middle third of elytra white (transverse elytral fascia sometimes slightly narrowed towards suture); proximal two thirds of pro- and midfemora dark chestnut brown, distal third of pro- and midfemora, protibiae and tarsi of pro- and midlegs yellow (except black comb on second protarsomere in the male sex); midtibiae bicolorous (proximal and distal quarter yellow, the two middle quarters brownish darkened); hindlegs dark chestnut brown (hindtarsi lighter).

Pubescence (both sexes): composed of white short reclinate setae.

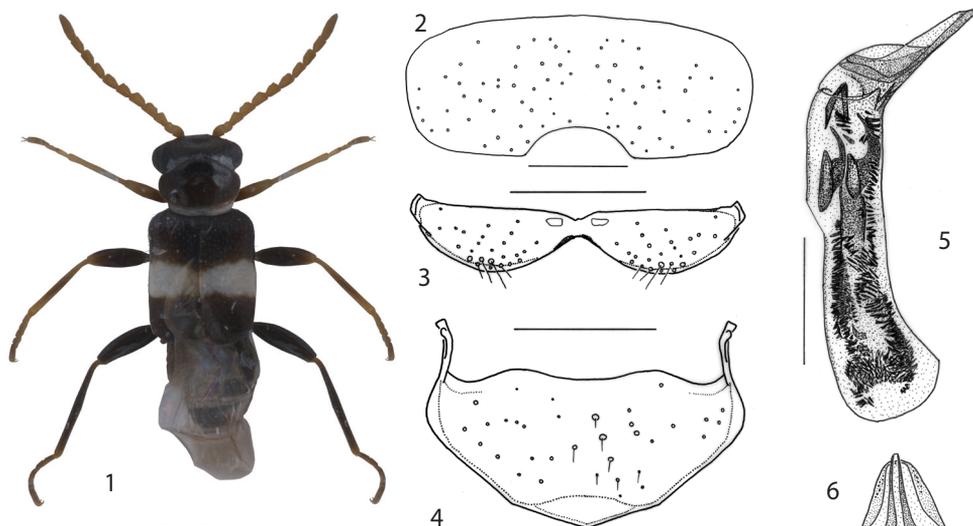
Structures: Male: Antenna long, reaching inside basal half of elytra; antennomere III ~1.2 times longer than broad, subtriangular; antennomeres IV and V ~1.1 times longer than broad, conical, broadest next to their apices; antennomere VI a bit longer than broad, conical, broadest next to its apex; antennomeres VII till XI distinctly more slender than preceding ones; antennomere VII till IX ~1.7 times longer than broad, subparallel, broadest in the distal two thirds; antennomere X ~1.6 times longer than broad, subparallel, broadest in the distal two thirds; antennomere XI ~2.9 times longer than broad, subparallel from base, broadest in the basal three fifths then converging towards tip.

Head capsule broader than long; fronto-clypeal region concave, only epistomal plate and antennal sockets indicated by a raise in height; surface sculpture finely punctate, interspaces several times larger than the puncture diameters.

Pronotum subpentagonal in outline, broader than long, more slender than head capsule (incl. compound eyes); apex strongly arcuate, sides sinuous, base subarcuate; pronotal disc arched and with colliculate surface sculpture; pronotal base more slender than apex and flat; pubescence and puncturation as on head vertex.

Scutellum sub-quadrate; surface structure similar to that of elytra.

Elytra shortened, leaving the last three visible tergites exposed; broader than pronotum, ~2.3 times longer than pronotum; sides subparallel; apical tips broadly and not conjointly rounded; surface sculpture especially in the basal third asperous.



Figs. 1. Habitus of *Brachyattalus albovittatus* sp. nov., male sex (composite image of two male specimens, edited digitally).

Figs. 2-6. Diagnostic characters of *Brachyattalus albovittatus* sp. nov., male sex: 2- sternite VII, ventral; 3- sternite VIII, ventral; 4- tergite VIII, dorsal; 5- median lobe, lateral; 6- median lobe, ventral; scale bars = 0.1 mm.

Figs. 7-9. Distribution and collecting circumstances of *Brachyattalus albovittatus* sp. nov.: 7- location of type locality in Oman; 8- aspect of type locality; 9- habitat.





Hind wings fully developed.

Legs long and slender, tarsi pentameric, second protarsomere in the male sex with an indistinct comb.

Abdomen with five visible segments. Male terminalia: Sternite VII (Fig. 2) with broadly rounded side margins and a median semicircular incision at posterior margin; Sternite VIII (Fig. 3) with strongly concave posterior margin, with very short and broad struts, and with two submedian fenestrae basally; Tergite VIII (Fig. 4) subpentagonal with long struts; median lobus (Figs. 5-6) elongate, with flexible apex with an apophyse-like structure, and many different endophallites: an elongate median sclerite obscured by two submedian bands consisting of numerous tiny spines, two large thorn-like sclerites, and a bipartite subapical sclerite.

Female: Eidonomy as in the male sex, except fronto-clypeal region less concave, antennae a bit shorter, and protarsi without comb.

**Diagnosis.** *Brachyattalus albovittatus* sp. nov. differs from congeners occurring close by in coloration at least: *Brachyattalus anastasei* (Pic, 1931), which has been described from southern Egypt, possesses a unicolorous black head capsule, pronotum and extremities, and black elytra with a white macula on each elytron. *Brachyattalus arabicus* (Wittmer, 1980), which has been described from Saudi Arabia, is predominantly black coloured. *Brachyattalus tenuipubens* (Wittmer, 1986), which has been described from Iran, possesses a bicolorous head capsule (apical half yellow, basal one black), a brown pronotum and brownish-black elytra.

**Distribution.** So far, only known from the type locality (Fig. 7). The specimens described above represent the first country record of the genus from Oman.

**Etymology.** The species epithet is a Latin adjective (“white-striped”) and refers to the conspicuous colouration of the specimens described below.

**Ecology.** The type series was collected in the gorge of Wadi Ronub (Fig. 8; alternatively spelled ‘Rawnab’ in the literature), which is located in the Jiddat Al Arkad plateau and discharges occasional rain-floods over the Sahil al Jazir coastal plain into the Dawhat Sawqirah bay (Arabian Sea). The ambient climate of Wadi Ronub is hyper-arid (Young et al. 2004). The vegetation at the collecting site was made up among others of the following taxa: On the gentler slopes and along the banks of the wadi, there were scattered trees and fringing plants, including *Acacia tortilis* (Forssk.) Hayne, *Prosopis cineraria* (L.) Druce, *Ziziphus spina-christi* (L.) Desf. and *Salvadora persica* L., and smaller flowering shrubs such as *Tetraena simplex* (L.) Beier & Thulin, *Blepharis ciliaris* (L.) B. L. Burt and *Pulicaria glutinosa* Jaub & Spach; the site is also covered with scattered bands of *Sporobolus spicatus* Kunth grass. The habitat of *B. albovittatus* sp. nov. can be circumscribed as an open xeromorphic dwarf shrubland intermixed with annuals and grasses and with few trees and large shrubs.

The type series was collected at the beginning of April. *Brachyattalus albovittatus* sp. nov. seems to appear as an adult insect at least in the spring transitional time. This coincides with a re-occurring weather pattern: most rainfall happens during spring due to the influence of the Oman Convergence Zone if there is no drought (Stanley-Price et al. 1988; Fisher & Membery 1998; Ghazanfar 2004).

**Collecting circumstances.** Around 10 yellow pan traps were put between the aforementioned shrubs and grasses (Fig. 9). The specimens were collected from the traps after three days and kept in alcohol.

When the type locality was revisited around the same time in 2020, specimens of the new taxon were not found again, because of an intense dry climate and an infestation of the Rima desert by the desert locust (*Schistocerca gregaria* (Forskål, 1775)), which arrived in early March 2020 - the vegetation was partially destroyed by desert locust feeding and the drought had desiccated most of the remainder.

**Discussion.** The new taxon is only known from specimens retrieved during one collection event. Any assessment of the distributional range of *B. albovittatus* sp. nov. is thus premature. Nevertheless, its discovery in an area known for endemic species (Miller & Nyberg 1991; Patzelt 2015) makes it a candidate for being so. Further faunistic research is needed to confirm or refute the hypothesis of species endemism.

The statements on habitat, phenology and seasonality of *B. albovittatus* sp. nov. made above have been generalized from the available data, viz. place and time of collection of the type series. The whole picture of life-history is of course incomplete, but, as far as it is known, typical for a desert dweller (cf. Noy-Meir 1973). There are other weather patterns that yield precipitation (Stanley-Price et al. 1988; Fisher & Membery 1998; Almazroui et al. 2013). For example, there are more or less regularly occurring nocturnal fogs and prevailing winds, which yield additional moisture and a cooling effect (Stanley-Price et al. 1988; Fisher

& Membery 1998; Borrell et al. 2019). This special weather is believed to be an ecological key driver for plant distribution in the area (Stanley-Price et al. 1988; Patzelt 2015; Borrell et al. 2019), and it has been hypothesized that animals can also utilize the resulting water resources (Ghazanfar 2004). However, it is presently unknown how *B. albovittatus* sp. nov. reacts to short precipitation events or survives drought (cf. Maute et al. 2019).

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